UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,404	02/19/2002	Ryuji Sato	Q68583	2141

7590 04/03/2007	EXAMINER
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC 2100 Pennsylvania Avenue, N.W. Washington, DC 20037-3213	HENNING, MATTHEW T

	ART UNIT	PAPER NUMBER
	2131	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	Applicant(s)
Office Action Summary	10/076,404	SATO, RYUJI
	Examiner	**Art Unit**	
	Matthew T. Henning	2131	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>01 December 2006</u>.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-14</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-14</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>27 September 2005</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a) ☒ All   b) ☐ Some * c) ☐ None of:

         1. ☒ Certified copies of the priority documents have been received.

         2. ☐ Certified copies of the priority documents have been received in Application No. _____.

         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

1   This action is in response to the communication filed on 12/01/2006.

2   **DETAILED ACTION**

3   *Response to Arguments*

4   Applicant's arguments filed 12/1/2006 have been fully considered but they are not

5   persuasive.

6   The examiner first points out that the numerous differences between Glover and the

7   claimed invention, as alleged by the applicants, are merely nominal differences. The "computer

8   program file" of Glover is functionally equivalent to the "device driver" of the claimed

9   invention. Also, the "unwrap procedure" and "device driver" of Glover are functionally

10 equivalent to the "initialization process" and "decryption" of the claimed invention. Further, the

11 "hidden application" of Glover is functionally equivalent to the "encrypted code" of the claimed

12 invention. The examiner has included a diagram labeled Appendix A, which compares

13 illustrates the functional equivalencies between Glover and the claimed invention. The examiner

14 further notes that there are no limitations in the claim language that distinguish the functionality

15 of the claimed "device driver" in the method claims from the "computer program file" of Glover.

16   Regarding the applicants' argument that, in Glover, the "device driver" of the "computer

17 program file" is separate from the encrypted code portion, and therefore the "device driver" does

18 not comprise the encrypted code portion, the examiner does not find the argument persuasive.

19 The applicants appear to have misinterpreted the rejection, and as such the examiner has added

20 more citations to the prior art rejections below in order to clarify the rejection. Further, the

21 examiner points out that the "computer program file" of Glover reads on the "device driver" as

22 claimed. The "device driver" of Glover reads on the "decryption" portion of the "initialization

1   process" as claimed. And, the "hidden application" reads on the "encrypted code" as claimed.

2   This does not coincide with the applicants' argument that element 52 of Glover does not contain

3   the "hidden application" 54 of Glover. Because the examiner has not relied upon element 52

4   comprising element 54, the examiner does not find the argument persuasive.

5   Regarding applicants' argument that no part of the device driver in Glover has been

6   encrypted, the examiner does not find the argument persuasive. Again, the examiner has relied

7   upon functionally equivalent "computer program file" 126 of Glover as reading on the claimed

8   device driver. Element 126 of Glover not only contains an encrypted "hidden application", but

9   further disclosed that this hidden application can be a device driver. This is seen in Glover Col.

10 9 Paragraph 2, especially Lines 33-35. As such, the examiner does not find the argument

11 persuasive.

12   Regarding applicants' argument that Glover did not disclose that the device driver itself

13 comprises an encrypted program code portion which is then decrypted, the examiner does not

14 find the argument persuasive. As discussed above, the examiner has relied upon functionally

15 equivalent "computer program file" 126 of Glover as reading on the claimed device driver.

16 Element 126 of Glover not only contains an encrypted "hidden application", but further disclosed

17 that this hidden application can be a device driver. This is seen in Glover Col. 9 Paragraph 2,

18 especially Lines 33-35. Further still, Glover disclosed in Col. 9 Paragraph 2, that the hidden

19 application is decrypted in order to provide access to the application. As such, the examiner does

20 not find the argument persuasive.

21   Regarding applicants' argument that the device driver of Glover decrypts the encrypted

22 code from the file system driver, not the device driver itself, the examiner does not find the

1 argument persuasive. Once again, the examiner has relied upon functionally equivalent

2 "computer program file" 126 of Glover as reading on the claimed device driver. Element 126 of

3 Glover not only contains an encrypted "hidden application", but further disclosed that this hidden

4 application can be a device driver. This is seen in Glover Col. 9 Paragraph 2, especially Lines

5 33-35. Further still, Glover disclosed in Col. 9 Paragraph 2, that the hidden application is

6 decrypted, by element 52 which is contained within element 126, in order to provide access to

7 the application. This is seen is Col. 9 Paragraph 2. As such, the examiner does not find the

8 argument persuasive.

9   Because the examiner does not find the arguments persuasive, the examiner has

10 maintained the previously presented prior art rejections, and has provided a more detailed

11 rejection in order to clarify the rejection of the claims.

12   All objections and rejections not set forth below have been withdrawn.

13   Claims 1-14 have been examined.

14   *Claim Rejections - 35 USC § 102*

15   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

16 basis for the rejections under this section made in this Office action:

17   *A person shall be entitled to a patent unless –*

18   *(b) the invention was patented or described in a printed publication in this or a foreign*
19 *country or in public use or on sale in this country, more than one year prior to the date of*
20 *application for patent in the United States.*
21
22   Claims 1-2, and 4-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Glover

23 (US Patent Number 6,052,780).

1   Regarding claim 1, Glover disclosed a method for operating a device driver (See Glover

2   Abstract and Col. 9 Lines 7-9), comprising the steps of: providing a device driver (See Glover

3   Fig. 7 "Computer Program File") comprising an encrypted program code portion of a main

4   process thereof (See Glover Col. 9 Lines 25-35 hidden information); decrypting the encrypted

5   program code portion in an initialization process (See Glover Fig. 7 "Unwrap Procedure" and

6   "Device Driver") of said device driver (See Glover Col. 9 Lines 25-35), wherein the decrypting

7   is performed by said device driver (Computer Program File) and the encrypted program code

8   portion to be decrypted is in said device driver's own program (See Glover Figs. 6-7, and Col. 11

9   Paragraph 2); executing the decrypted program code portion (See Glover Col. 11 Lines 3-5) and

10   re-encrypting the executed decrypted program code portion in an end process of the device

11   driver, in which said device driver is released, wherein the re-encrypting is performed by the

12   device driver (See Glover Col. 10 Lines 45-47 and Col. 22 Lines 32-36).

13   Claim 2 is rejected for the same reasons as claim 1 above and further because Glover

14   disclosed initializing (Unwrap Procedure) the device driver (Computer Program File) before

15   decrypting the portions of code (See Glover Col. 9 Lines 16-19 and Col. 10 Lines 19-27).

16   Regarding claims 4-5, Glover disclosed extracting a numeric value from an application;

17   and a creating key, corresponding to the numeric value, for decrypting and re-encrypting the

18   program code portion in said decrypting and re-encrypting of the program code portion steps

19   (See Glover Col. 21 Lines 32-38).

1   *Claim Rejections - 35 USC § 103*

2   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

3   obviousness rejections set forth in this Office action:

4   *A patent may not be obtained though the invention is not identically disclosed or*
5   *described as set forth in section 102 of this title, if the differences between the subject matter*
6   *sought to be patented and the prior art are such that the subject matter as a whole would have*
7   *been obvious at the time the invention was made to a person having ordinary skill in the art to*
8   *which said subject matter pertains. Patentability shall not be negatived by the manner in which*
9   *the invention was made.*
10

11   Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glover, and further

12   in view of Schneier ("Applied Cryptography, Second Edition").

13   Glover disclosed encrypting a program code portion, decrypting the program code

14   portion, executing the decrypted program code portion, and re-encrypting the program code

15   portion after processing was complete (See the rejection of claim 1 above and Col. 9 Lines 22-24

16   and Lines 33-35), but failed to disclose encrypting and decrypting with two different keys.

17   Schneier teaches that double encryption using two different keys provides two times the

18   security of single encryption (See Schneier Section 15.1).

19   It would have been obvious to the ordinary person skilled in the art at the time of

20   invention to employ the teachings of Schneier in the encryption, decryption, re-encryption

21   system of Glover, by encrypting the portion of code with one key and encrypting the result with

22   a second key and decrypting in a reverse manner. This would have been obvious because the

23   ordinary person skilled in the art at the time of invention would have been motivated to increase

24   the security of the encrypted program.

1   Claims 6-11 rejected under 35 U.S.C. 103(a) as being unpatentable over Glover as

2   applied to claims 1-2 above, and further in view of McManis (US Patent Number 5.757.914).

3   Regarding claims 6-7, Glover disclosed the device driver communicating with an

4   application (See Glover Col. 10 Lines 34-47), but failed to disclose authentication between the

5   two.

6   McManis teaches a method for protecting two communicating applications in which

7   before process A calls process B, A authenticates B by verifying the integrity of B, and before B

8   responds to A, B verifies the integrity of A, and in both cases if the verification fails execution is

9   aborted (See McManis Col. 3 Line 53- Col. 6 Line 9).

10   It would have been obvious to the ordinary person skilled in the art at the time of

11   invention to employ the teachings of McManis in the dynamically loaded device driver by

12   mutually authenticating the calling application and the device driver by integrity verification

13   when a request is made by the application to the device driver. This would have been obvious

14   because the ordinary person skilled in the art would have been motivated to protect the use of the

15   application as well as the use of the dynamically loaded device driver.

16   Regarding claims 8-9, the combination of Glover and McManis disclosed providing an

17   application, which requests the device driver (See Glover Col. 11 Lines 6-11), utilizing the

18   application to detect whether or not the program code portion of said device driver has been

19   forged before supplying output data to said device driver, and when the program code portion of

20   said device driver has been forged, the application stops outputting the output data to hardware,

21   and utilizing the device driver to detect whether or not a program code portion of the application

22   has been forged before supplying input data to the application, and when the program code

1   portion of the application has been forged, said device driver stops outputting the input data to

2   the application (See McManis. Fig 2 and related text).

3   Regarding claims 10-11, the combination of Glover and McManis disclosed that said

4   device driver does not decrypt encrypted data of the application, and wherein only when the

5   program code portion of said device driver has not been forged, the application decrypts the

6   encrypted data and provides the decrypted data as the output data to said device driver (See

7   McManis Col. 5 Lines 50-67).

8   Claims 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glover as

9   applied to claims 1 and 2 above, and further in view of Cabrera et al. (US Patent Number

10   5,978,815) hereinafter referred to as Cabrera.

11   Glover disclosed a device driver being executed (See Glover Col. 9 Lines 33-35 and Col.

12   10 Lines 43-47), but failed to disclose the device driver communicating between an application

13   arranged at a user level and hardware arranged at a privilege level.

14   Cabrera teaches that device drivers are used to communicate between hardware and

15   software and that the software typically runs in a user mode and the driver operates at the

16   privilege level (See Cabrera Col. 7 Paragraph 2).

17   It would have been obvious to the ordinary person skilled in the art at the time of

18   invention to employ the teachings of Cabrera in the system for securing device drivers of Glover

19   by having the device driver communicate between a user mode application and hardware

20   arranged at the privilege level. This would have been obvious because the ordinary person

21   skilled in the art would have been motivated to allow the driver to perform many functions that

22   would not be possible from user mode.

1   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glover and

2   McManis as applied to claim 3 above, and further in view of Cabrera.

3   Glover and McManis disclosed a device driver being executed (See Glover Col. 9 Lines

4   33-35 and Col. 10 Lines 43-47), but failed to disclose the device driver communicating between

5   an application arranged at a user level and hardware arranged at a privilege level.

6   Cabrera teaches that device drivers are used to communicate between hardware and

7   software and that the software typically runs in a user mode and the driver operates at the

8   privilege level (See Cabrera Col. 7 Paragraph 2).

9   It would have been obvious to the ordinary person skilled in the art at the time of

10   invention to employ the teachings of Cabrera in the system for securing device drivers of Glover

11   and McManis by having the device driver communicate between a user mode application and

12   hardware arranged at the privilege level. This would have been obvious because the ordinary

13   person skilled in the art would have been motivated to allow the driver to perform many

14   functions that would not be possible from user mode.

15

16

17

18

19   *Conclusion*

20   Claims 1-14 have been rejected.

21   The prior art made of record and not relied upon is considered pertinent to applicant's

22   disclosure.

1   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

2   policy as set forth in 37 CFR 1.136(a).

3   A shortened statutory period for reply to this final action is set to expire THREE

4   MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

5   MONTHS of the mailing date of this final action and the advisory action is not mailed until after

6   the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

7   will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

8   CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

9   however, will the statutory period for reply expire later than SIX MONTHS from the mailing

10   date of this final action.

11   Any inquiry concerning this communication or earlier communications from the

12   examiner should be directed to Matthew T. Henning whose telephone number is (571) 272-3790.

13   The examiner can normally be reached on M-F 8-4.

14   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

15   supervisor, Ayaz Sheikh can be reached on (571) 272-3795. The fax phone number for the

16   organization where this application or proceeding is assigned is 571-273-8300.

1   Information regarding the status of an application may be obtained from the Patent

2   Application Information Retrieval (PAIR) system. Status information for published applications

3   may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

4   applications is available through Private PAIR only. For more information about the PAIR

5   system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

6   system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

7   like assistance from a USPTO Customer Service Representative or access to the automated

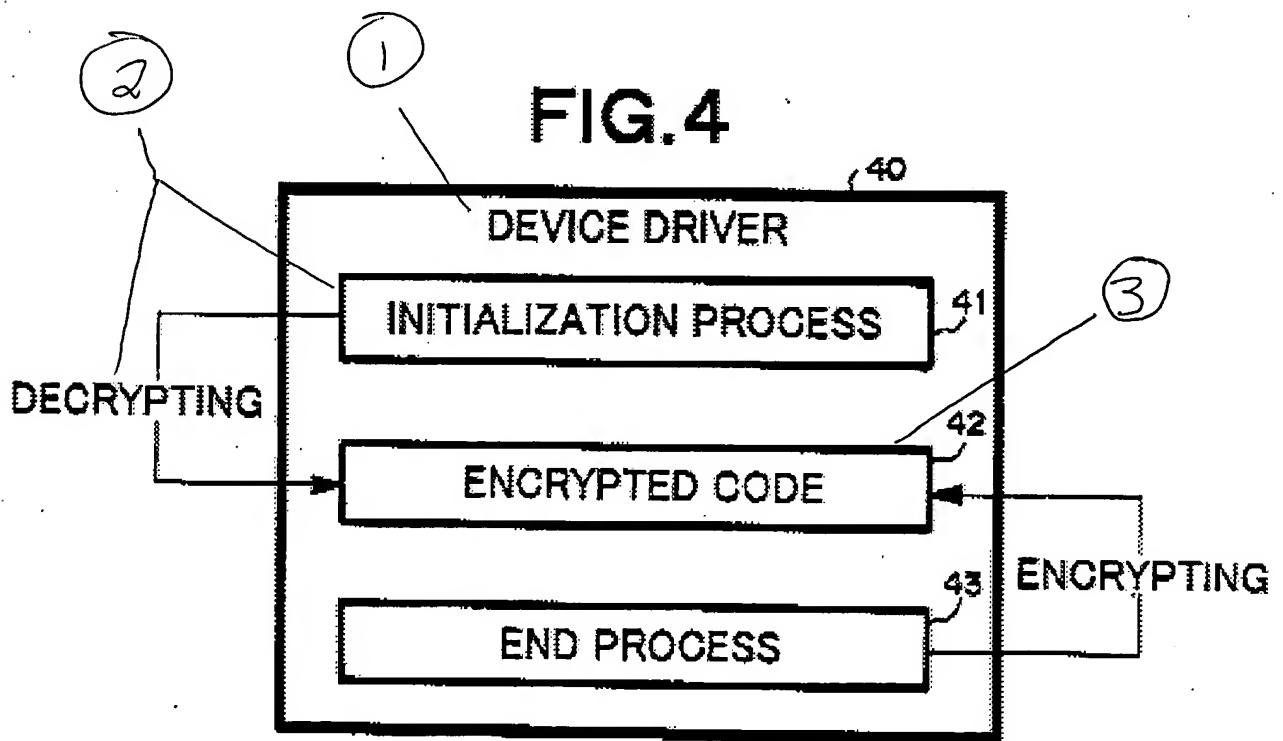8   information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.
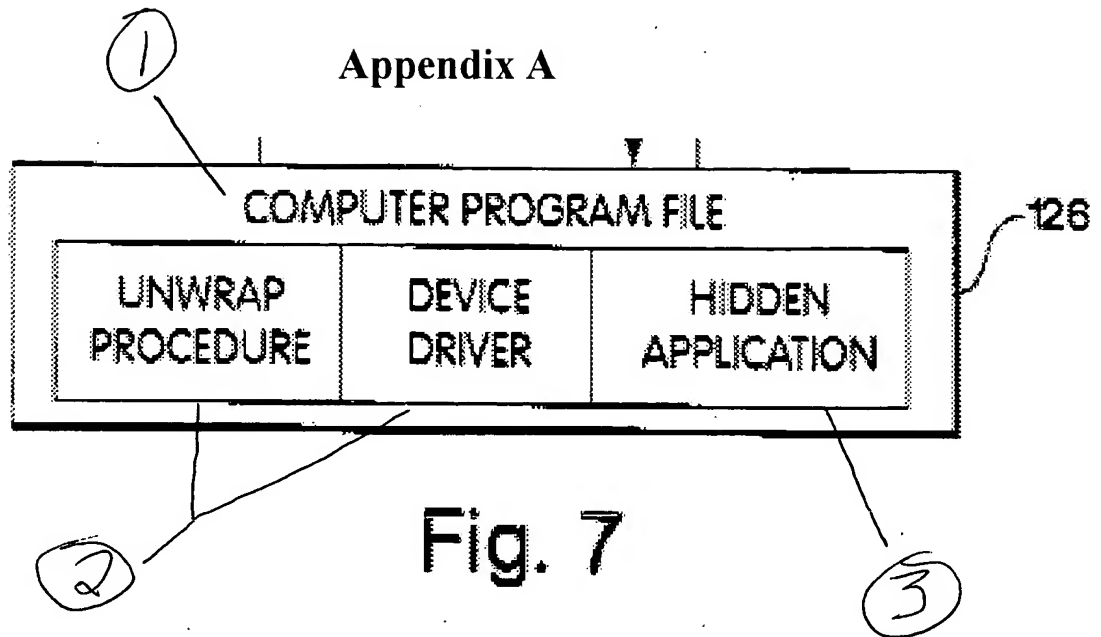
9
10
11   Matthew Henning
12   Assistant Examiner
13   Art Unit 2131
14   3/27/2007

CHRISTOPHER REVAK
PRIMARY EXAMINER

①

COMPUTER PROGRAM FILE			~126
UNWRAP PROCEDURE	DEVICE DRIVER	HIDDEN APPLICATION	

②   ③

Fig. 7

②   ①

FIG.4

DEVICE DRIVER ⌐40	
INITIALIZATION PROCESS	41
ENCRYPTED CODE	42
END PROCESS	43

③

DECRYPTING

ENCRYPTING

① = Device Driver

② = Initialization Process (Decryption)

③ = Encrypted Program Code Portion